

TDLNA0840EP

0.3 – 4 GHz UHF Wideband Ultra Low Power LNA

Product Overview

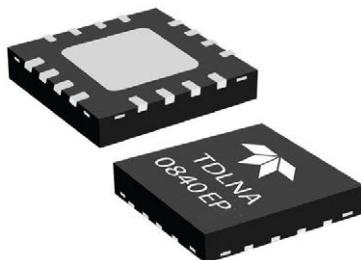
The TDLNA0840EP is a UHF, wideband, low power LNA MMIC. It provides a typical gain of 29 dB and a typical NF of 1.5 dB across the operating frequency range, with a maximum power consumption of only 30 mW from a 1.5-volt supply. The RF ports are internally dc blocked and matched to 50 ohms. The TDLNA0840EP is packaged in a 3 x 3 x 0. mm, 16-lead, plastic over molded QFN.

Typical applications include terrestrial military, aionics, and LEO space applications. It is well suited for phased antenna arrays for communication systems due to its low noise, low power consumption, and flat gain response.

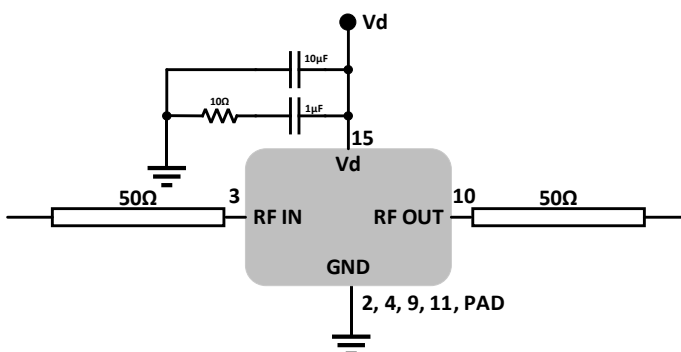
Features

- Frequency range: 0.3 GHz to 4 GHz
- Power consumption: 30 mW maximum
- Gain: 29 dB typical
- NF: 1.5 dB typical @ 25 °C
- 3 x 3 x 0.9 mm 16L plastic QFN
- Operating Temperature Range: -55 °C to 125 °C

Package Top side/Bottom side



Suggested Application Circuit



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Absolute Maximum Ratings ⁽¹⁾

Parameter	Symbol	Value
Drain bias voltage	V _d	4 V
Junction Temperature	T _J	175 °C
Maximum Power Dissipation	P _{diss}	50 mW
Package Theta-JC	θ _{JC}	125 °C/W
RF input power (20% duty cycle)	RFin	+28dBm
Storage Temperature	T _{storage}	-55 to 150 °C

(1) Operation outside these conditions may cause permanent damage to the device. Combination of maximum rating conditions may reduce the values. Device performance at these ratings is not implied.

Electrical Specifications

. V_d = 1.5 V, F_{in} = 0.3 to 4.0 GHz, R_L = 50 Ω, and T_A = -55 °C to +125 °C unless specified otherwise

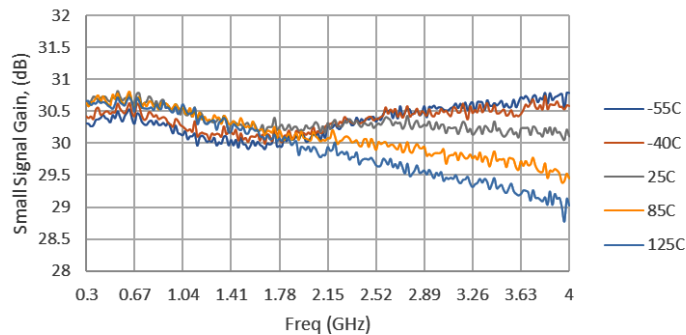
Parameter	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage, V _d		0.85	1.5	3	V
Supply Current, I _d		5	15	20	mA
Power Consumption	T _A ≤ 85 °C 85 °C > T _A ≤ 125 °C			25 30	mW mW
Frequency range		0.3		4	GHz
Small Signal Gain		27	29	32	dB
P1dB Input Power		-37	-35	-30	dBm
Noise Figure	1.0 to 4.0 GHz 0.3 to 4.0 GHz		1.5 2	3.5 5.0	dB dB
I/P Return Loss		5	10		dB
O/P Return Loss		5	10		dB
Stability Factor		1			mu
Operating temperature		-55		125	°C
ESD	HBM			500	V
	CDM			1000	V



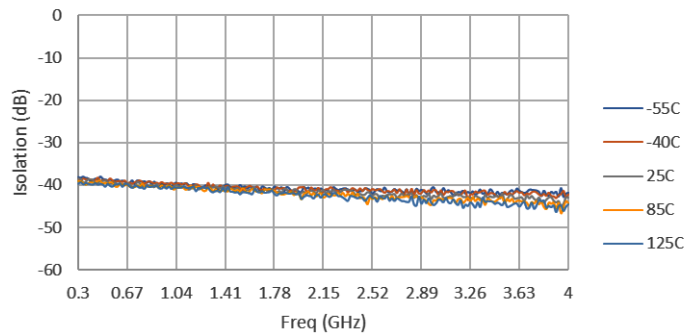
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Measured Performance Over Temperature

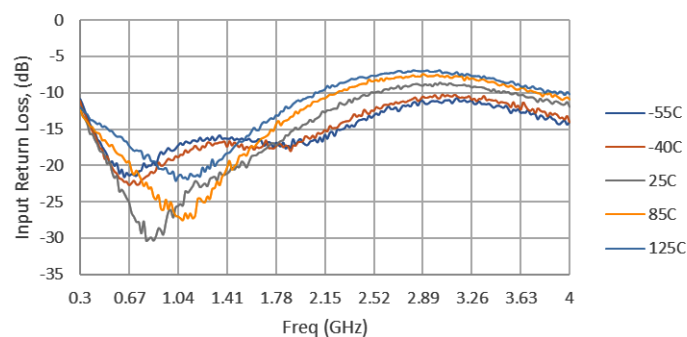
Small Signal Gain (S21) vs. Frequency



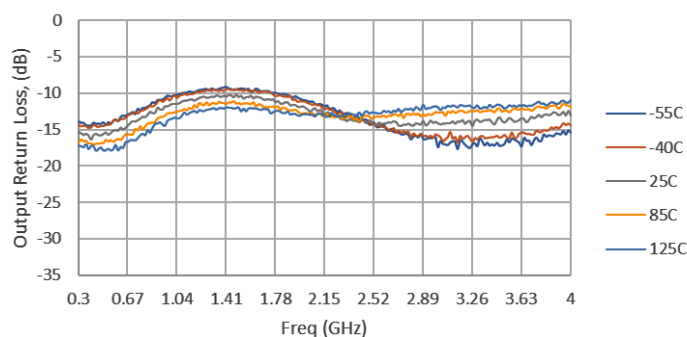
Isolation (S12) vs. Frequency



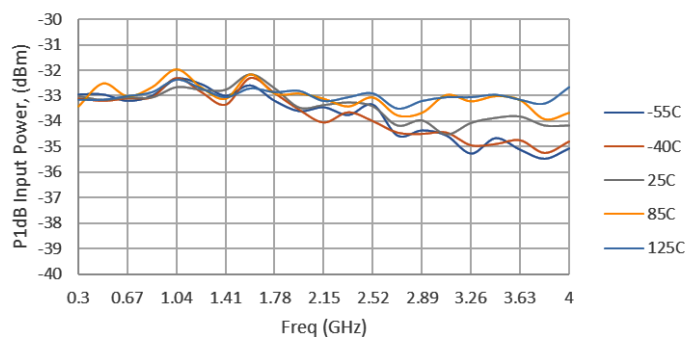
Input Return Loss (S11) vs. Frequency



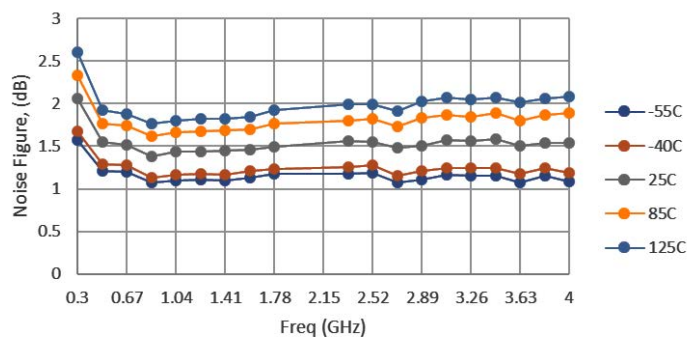
Output Return Loss (S22) vs. Frequency



P1dB Input Power vs. Frequency

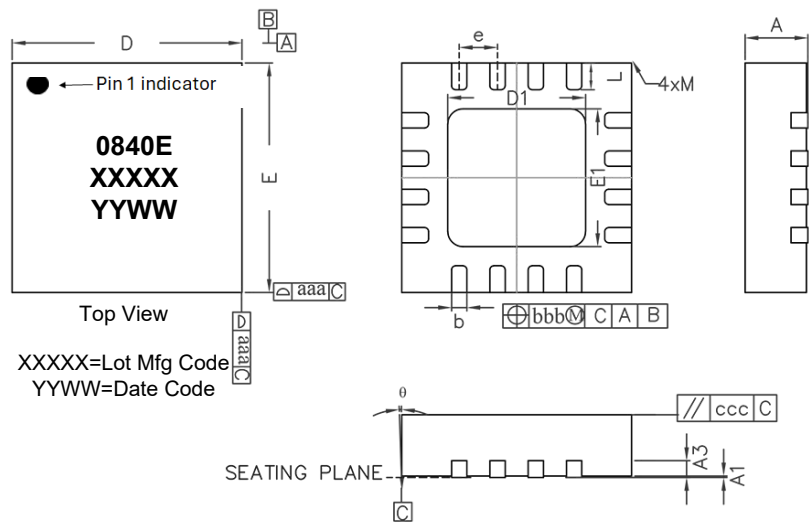


Noise Figure vs. Frequency

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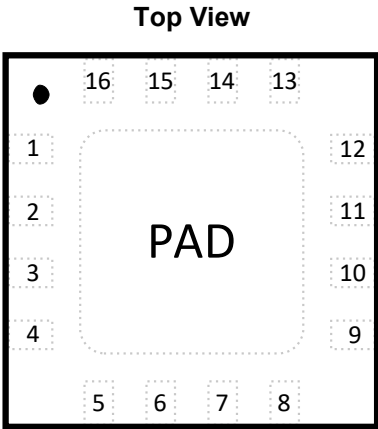
Package Marking and Outline Information



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0	0.02	0.05
A3	---	0.25REF.	---
b	0.18	0.23	0.30
D	2.85	3.00	3.15
D1	---	1.8BSC	---
E	2.85	3.00	3.15
E1	---	1.8BSC	---
e	---	0.50BSC	---
L	0.30	0.35	0.45
θ	0	---	12
aaa	---	0.25	---
bbb	---	0.10	---
ccc	---	0.10	---
M	---	---	0.05

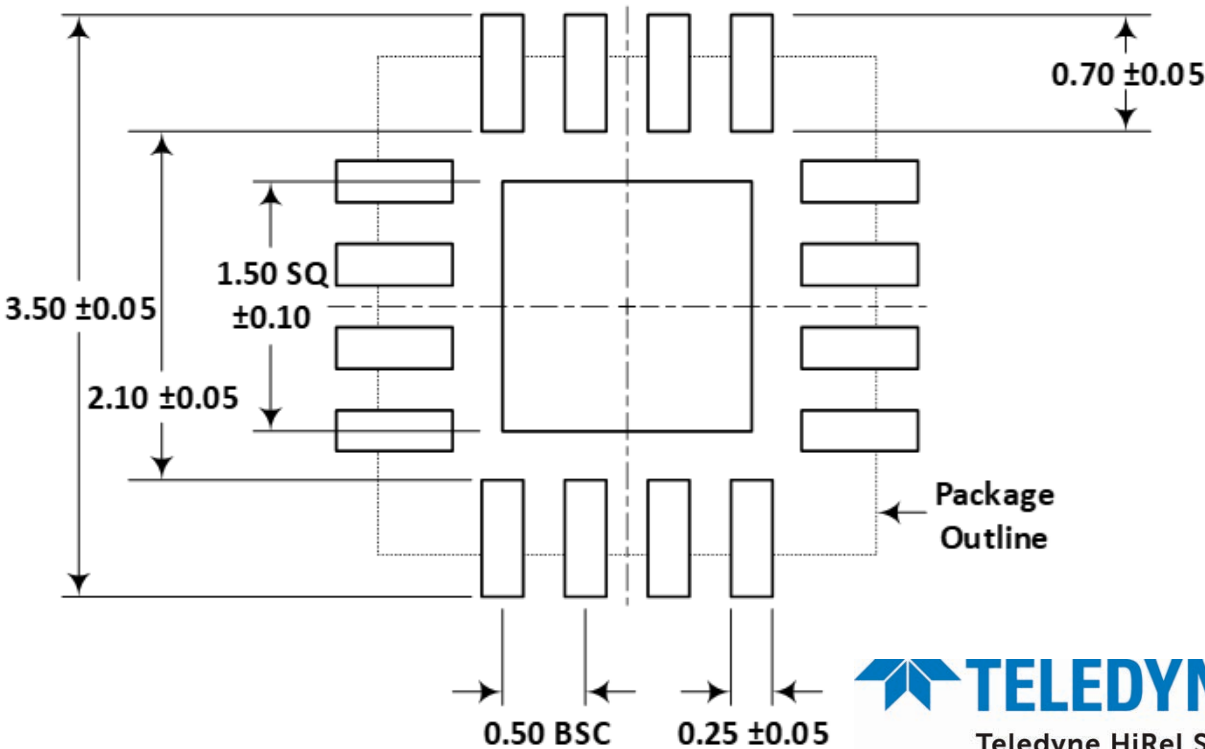
- 1.ALL DIMENSIONS ARE IN MILLIMETERS,θ IS IN DEGREES.
- 2.M : THE MAXIMUM ALLOWABLE CORNER ON THE MOLDED PLASTIC BODY CORNERS.
- 3.DIMENSION 'D' DOES NOT INCLUDE MOLD PROTRUSIONS OR GATE BURRS.MOLD PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED 0.15mm PER SIDE.
- 4.DIMENSION'E' DOES NOT INCLUDE INTERTERMINAL MOLD PROTRUSIONS OR TERMINAL PROTRUSIONS. INTERTERMINAL MOLD PROTRUSIONS AND/OR TERMINAL PROTRUSIONS SHALL NOT EXCEED 0.20mm PER SIDE.
- 5.DIMENSION'b' APPLIES TO PLATED TERMINALS. DIMENSION A1 IS PRIMARILY Y TERMINAL PLATING,BUT MAY OR MAY NOT INCLUDE A SMALL PROTRUSION OF TERMINAL BELOW THE BOTTOM SURFACE OF THE PACKAGE.
- 6.DIE PAD SIZE 2.0X2.0mm HAS 1.8X1.8mm(BSC) EXPOSED PAD SIZE.
- 7.JEDEC MO-220

Package Pinout



PIN #	PIN NAME	DESCRIPTION
1, 5-8, 12-14, 16	N/C	No Connection
2	GND	Ground
3	RF IN	RF Input
4	GND	Ground
9	GND	Ground
10	RF OUT	RF Output
11	GND	Ground
15	Vd	Supply Voltage
PAD	GND	RF & DC Ground

Recommended PCB Land Pattern



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Ordering Information

Order Code	Description	Package	Shipping Method
TDLNA0840EP	0.3 to 4.0 GHz UHF to S-Band LNA	16L, 3 x 3 x 0.9 mm Plastic QFN	Tape & Reel
TDLNA0840-00	Evaluation Board with SMA Connectors	16L, 3 x 3 x 0.9 mm Plastic QFN	Box

Note: If requirements include burn-in, please select the alternative part TDLNA0840SEP which is burned in.

Revision Information

Document	Description / Date	Change/Revision Details
TDLNA0840EP_12_2025 Rev -	TDLNA0840EP December 17, 2025	Initial Release - Product Specification

Document Categories and Definitions:

Advance Information

The product is in a formative or design stage. The data sheet contains design target specifications for product development. Specifications and features may change in any manner without notice.

Preliminary Specification

The data sheet contains preliminary data. Additional data may be added at a later date. Teledyne e2v HiRel Electronics reserves the right to change specifications at any time without notice in order to supply the best possible product.

Product Specification

The data sheet contains final data. In the event Teledyne e2v HiRel Electronics decides to change the specifications, Teledyne e2v HiRel Electronics will notify customers of the intended changes by issuing a CNF (Customer Notification Form).

Sales Contact

For additional information, Email us at: hirel@teledyne.com website: www.tdehirel.com

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